

We claim:

1. An apparatus for controlling an automatic transmission comprising:
 - a standby state determination device which determines whether a vehicle is in a departure standby state or not;
 - a vehicle speed detecting device which detects vehicle speed;
 - a first gear shift control device which, when it is determined by said standby state determining device that the vehicle is in a departure standby state, and the vehicle speed detected by said vehicle speed detecting device is greater than or equal to a predetermined value, shifts the transmission to a neutral, and engages a mechanical clutch;
 - a reverse rotation determination device which determines whether the transmission is being rotated in reverse or not based on a rotational fluctuation on a driving side or a driven side of the mechanical clutch in a process for engaging the mechanical clutch by said first gear shift control device; and
 - a gear shift inhibiting device which, when determined by said reverse rotation determination device that the transmission is being rotated in reverse, prevents said transmission from being shifted to a drive stage.

2. The apparatus for controlling an automatic transmission according to claim 1, wherein said reverse rotation determination device determines that said transmission is being rotated in reverse when in the process for engaging said mechanical clutch, a rate of change of a rotational speed on the driving side thereof or the driven side thereof becomes greater than or equal to a predetermined upper limit value and less than or equal to a predetermined lower limit value.

3. The apparatus for controlling an automatic transmission according to claim 1, wherein said reverse rotation determination device determines that said transmission is being rotated in reverse when in the process for engaging said mechanical clutch, a rotational speed on the driven side thereof is less than or equal to a predetermined value.
4. The apparatus for controlling an automatic transmission according to claim 1, wherein said standby state determination device determines that the vehicle is in the departure standby state when said transmission is shifted to a drive stage and said mechanical clutch is disengaged.
5. The apparatus for controlling an automatic transmission according to claim 1, comprising:
 - a departure operation determination device which determines whether or not a departure operation is being performed; and
 - a second gear shift control device which, when it is determined by said departure operation determination device that a departure operation is being performed, and it is determined by said reverse rotation determination device that the transmission is not being rotated in reverse, shifts the transmission to a drive stage according to a departure operation.
6. The apparatus for controlling an automatic transmission according to claim 5, wherein said departure operation determination device determines that a departure operation is performed when an accelerator pedal is pressed down at an angle greater than or equal to a predetermined angle, or when a gear shift instruction for the transmission is input.

7. The apparatus for controlling an automatic transmission according to claim 1, comprising an informing device which when determined by said reverse rotation determination device that the transmission is being rotated in reverse, informs the fact.

8. A method of controlling an automatic transmission, through execution on a computer, comprising the steps of:

determining whether a vehicle is in a departure standby state or not;

shifting the transmission to a neutral, and engaging a mechanical clutch when it is determined that the vehicle is in a departure standby state, and a vehicle speed is greater than or equal to a predetermined value,;

determining whether the transmission is being rotated in reverse or not based on a rotational fluctuation on a driving side or a driven side of the mechanical clutch in a process for engaging the mechanical clutch; and

inhibiting said transmission from being shifted to a drive stage when it is determined that the transmission is being rotated in reverse,.

9. The method of controlling an automatic transmission according to claim 8, wherein

said step to determine whether said transmission is being rotated in reverse or not determines that said transmission is being rotated in reverse when in the process for engaging said mechanical clutch, a rate of change of a rotational fluctuation on the driving side or the driven side becomes greater than or equal to a predetermined upper limit value and less than or equal to a predetermined lower limit value.

10. The method of controlling an automatic transmission according to claim 8, wherein

said step to determine whether said transmission is being rotated in reverse or not determines that said transmission is being rotated in reverse when in the process for engaging said mechanical clutch, a rotational speed on the driven side is less than or equal to a predetermined value.

11. The method of controlling an automatic transmission according to claim 8, wherein said step to determine whether a vehicle is in a departure standby state or not determines that the vehicle is in a departure standby state when said transmission is shifted to a drive stage, and said mechanical clutch is disengaged.

12. The method of controlling an automatic transmission according to claim 8, further comprising the steps of:

determining whether or not a departure operation has been performed; and
shifting the transmission to a drive stage according to the departure operation when it is determined that the departure operation has been performed, and it is determined that the transmission is not being rotated in reverse .

13. The method of controlling an automatic transmission according to claim 12, wherein said step to determine whether or not the departure operation has been performed determines that the departure operation has been performed when an accelerator pedal is pressed down at an angle greater than or equal to a predetermined angle, or when a gear shift instruction for the transmission is input.

14. The method of controlling an automatic transmission according to claim 8, which further comprises the step of operating an informing device which, when determined that said transmission is being rotated in reverse, informs the fact, said information device operating step being executed on a computer.